

REMARKS

In the Official Action, the Examiner rejected claims 1-10 under the second paragraph of 35 U.S.C. § 112 for allegedly failing to include certain perceived essential elements, namely a condenser and heating or cooling means to effect condensing, and for allegedly being indefinite with respect to the subject matter of the claims. In this latter respect, the Examiner questioned whether the applicant was trying to remove impurities from rain water or from sea water, whether applicant was claiming a solar still and what applicant is doing in order to separate the specific ingredients. In addition, the Examiner rejected claims 1-3 as allegedly being anticipated by Saal et al., U.S. Patent No. 6,447,685, or Sakurai, U.S. Patent No. 5,960,859, and as being unpatentable over Sear, U.S. Patent No. 4,172,767. Claims 4-10 have not been rejected over the prior art.

Addressing the rejections in the order in which they have appeared in the Official Action, applicants first note that the claims in a patent application cannot be considered in a vacuum, but must always be read in light of the teachings of the specification. In the present situation, it is evident that the present invention relates to an energy-saving apparatus for concentrating a specific ingredient that is dissolved in a liquid (see paragraph [0005]) which is now set forth with greater clarity in amended claim 1. The apparatus comprises an upper tank, a lower tank provided under the upper tank, with the upper tank being provided with a liquid-falling opening and a valve for controlling the liquid flow from the upper tank to the lower tank. The apparatus further comprises a circulator for circulating the liquid in the upper tank and transfer means for transferring the liquid in the lower tank into the upper tank wherein the upper tank is open to the atmosphere so that the liquid in the upper tank

can be subjected to evaporation by the sun as described in the specification such as in paragraphs [0030] and [0038] and as illustrated in the drawings.

As set forth in the passage beginning with paragraph [0011], if the apparatus is not exposed to rain, the liquid containing the specific ingredient dissolved therein (e.g., sea water containing dissolved lithium) is exposed to the sun so that evaporation of the liquid can occur thereby concentrating the specific ingredient. To improve this function, the apparatus contains a circulator which in a preferred embodiment is a fountain which sprays the liquid in the form of easily evaporable fine water drops whereby the concentration of the ingredient in the liquid in the upper tank is concentrated. If the apparatus is subjected to rain, which would dilute the contents of the upper tank, the liquid in the upper tank is transferred to the lower tank by operation of the afore-mentioned valve. Hence, it can be understood that the apparatus is not designed to treat rainwater which typically does not have a specific ingredient dissolved therein.

As plainly disclosed in paragraph [0040], the concentrated liquid can be further concentrated for evaporation under heating. In this instance, a boiler and pump can be used to further concentrate the liquid. Therefore, based on a correct understanding of the present invention, it is clear that the essential elements of the present invention are properly recited in the claims and that the claims clearly and distinctly define the various aspects of the present invention in conformance with the provisions of the second paragraph of 35 U.S.C. § 112, when they are read in light of the specification.

Turning to the prior art rejections set forth in the Official Action, it will be understood from the foregoing discussion and the claims of record that the cited prior art does not relate to an apparatus for concentrating a specific ingredient which is

dissolved in a liquid and does not contain the specific components defined in the claims. In particular, Sakurai relates to an air conditioning system for a vehicle passenger compartment in which is contained an evaporator that includes upper and lower tanks with communication therebetween. The disclosed air conditioning system has nothing to do with a condensing apparatus for concentrating a specific ingredient which is dissolved in the liquid as recited in the claims of record. Aside from the superficial relationship with respect to upper and lower tanks, the disclosed system does not contain all the other claim components and certainly does not have an upper tank which is open to the atmosphere so that the liquid in the upper tank can be subjected to evaporation by the sun. Indeed, such arrangement would clearly not be desired in the system of Sakurai.

A similar understanding can be obtained with respect to the device of Saal et al. which relates to an apparatus for separating water-containing solvent mixtures having two or more phases, particularly dry cleaning solvents, using gravitational separators indicated by 4 and 16 in Fig. 2. Aside from the fact that the disclosed apparatus has nothing to do with the presently claimed invention, it will be noted from the description provided in the passage beginning at column 5, line 21 that liquid to be separated is introduced into the lower tank and, without any apparent valving therebetween, the lighter phase is introduced into upper tank 16. Moreover, there is no circulator for circulating the liquid in the upper tank and the upper tank is not open to the atmosphere so that the liquid in the upper tank can be subjected to evaporation by the sun. Indeed, if the upper tank was open to the atmosphere, this would permit evaporation of dry cleaning organic solvents which could cause potential health concerns. Accordingly, Saal et al. cannot be used to reject any of the claims of record.

Sear relates to a water purification system wherein impure water is evaporated and the water vapor is condensed to recover fresh water. In order to achieve this goal, the evaporation tank is sealed to the atmosphere and the water vapor is subjected to condensation. In other words, if one were to attempt to modify the disclosed apparatus to meet the claims of record, it would essentially frustrate the very purpose of the patent since the water vapor would be lost to the atmosphere. Therefore, it is without question that the claims now of record are also patentable over this cited document.

For all of the reasons set forth above, applicants respectfully submit that the claims now of record fully meet the requirements of 35 U.S.C. § 112 and are patentable over the cited documents. Accordingly, reconsideration and allowance of the present application are requested consistent with the finding of patentability in the corresponding Japanese application.


As a final matter, applicants are hereby providing a certified copy of the Japanese priority application and request acknowledgment of the same in the next Official Action.

Should the Examiner have any questions concerning the subject application, the Examiner is invited to contact the undersigned attorney at the number provided below.

Respectfully submitted,

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Date: March 1, 2005

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